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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/084,398	Applicant(s) YANG ET AL.	
	Examiner Richard Bueker	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-22 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Newly submitted claims 17-22 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The process of claims 17-22 can be practiced using an apparatus other than the apparatus of claims 1-6 and 8-16, such as an apparatus that does not include a three-way valve. Also, the apparatus of claims 1-6 and 8-16 can be used for processes other than those claimed in claims 17-22, such as a process in which no purging step is utilized, or a purging step which is not followed by an atomizing step, such as a process in which an atomizing step is followed by a purging step followed by the end of the process and shutdown of the apparatus. The apparatus can also be used in a process that does not include use of a gas-mixing device, or in a process of etching rather than deposition. The apparatus can also be used in a process in which the carrier gas is not heated to the demanded production temperature, such as a process in which the carrier gas is heated to a temperature that is below the demanded production temperature or the carrier gas is not heated at all. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17-22 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 1-6 and 8-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In each of claims 1, 8 and 14, the phrase "liquid source" is used in an inconsistent manner. In claim 1, lines 3 and 4, for example,

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the phrase "said liquid injector is used to inject a liquid source and make said liquid source atomized", uses "liquid source" to refer to liquid that is in the process of being atomized. In claim 1, lines 8 and 9, however, the phrase "said three-way valve is used to connect said liquid source, said purging gas provider and said liquid injector" uses "said liquid source" to mean a supply of liquid such as that labeled 200 in Fig. 2.

Claims 4, 7, 10-12 and 14-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claims 10-11 and 14-16, the recited infrared ray thermostat device is not properly enabled by the specification as filed. It is noted that applicants have not traversed this rejection.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 stand rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sun (6,409,839). Sun (Fig. 6) discloses a vaporizer having a liquid injector that is inherently a "liquid injection module". A first three-way valve connects the liquid injector to a purge gas provider 72 and a liquid source 14. the discharge line 68 is an exhausting branch. The particular inert gases listed in claim 2 are a recitation of intended use that do not so limit the present apparatus claims.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (6,409,839) taken in view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is a well known CVD precursor liquid for use in semiconductor processing. If, for the sake of argument, claim 4 were considered to be limited by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to vaporize TMCTS in the vaporizer of Sun, because Stolmeijer teaches that TMCTS was a well-known liquid source in the CVD art.

Claims 1-4, 8-9 and 12 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sturm (6,178,925). Sturm (Fig. 1) discloses a flash vaporizer having a liquid injector 22 that supplies source liquid to a hot surface, which inherently causes atomization to at least some degree in the process of flash vaporization. Sturm's flash vaporizer is inherently a "liquid injection module". A purge gas provider 40 and a liquid source 32 are connected to the liquid

injector by a first three-way valve 24. The discharge outlet 60 is an exhausting branch as recited in claims 1 and 8. The particular inert gases listed in claims 2 and 9 are a recitation of intended use that do not so limit the present apparatus claims.

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturm (6,178,925) taken in view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is a well known CVD precursor liquid for use in semiconductor processing. If, for the sake of argument, claim 4 were considered to be limited by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to vaporize TMCTS in the vaporizer of Sturm, because Stolmeijer teaches that TMCTS was a well-known liquid source in the CVD art.

Claims 1-4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi (JP 2001-250819) taken in view of Lei (US 2003/0049933) and in further view of Sun (6,409,839) and/or Sturm (6,178,925). Noguchi discloses a liquid injection module (see Fig. 9) for vaporizing a source liquid and delivering the vapor to a CVD reactor. Fig. 9 of Noguchi illustrates that the vaporizer includes a liquid injector 41. Noguchi doesn't specifically say that the liquid is atomized, but Lei (see Figs. 6-8) describes the same type of vaporizer, and Lei (paragraphs 41 and 42) teaches that the liquid is atomized in this type of vaporizer, and it is well known in the art, as illustrated by Lei, that atomization inherently occurs in a vaporizer of the type used by Noguchi. Noguchi teaches (see Fig. 4, for example) the use of a purge gas line connected to the source liquid inlet line 46 for purging source liquid from the portion of line 46 that is near the heated vaporizer, but Noguchi doesn't teach the use of a three-way valve to connect

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the purge gas line to the source liquid inlet line 46. Sun (see Fig. 6) and Sturm (see Fig. 1) both also teach the use of a purge gas line for purging source liquid from the source liquid inlet line of a vaporizer. Furthermore, Sun (see valve 70 of Fig. 6) and Sturm (see valve 24 of Fig. 1) both also teach that the purge gas line can be successfully connected to the source liquid inlet line by means of a well-known three-way valve. It is well known in the art that a three-way valve such as valve 70 of Sun or valve 24 of Sturm can be used as a more compact replacement for two valves such as valves 33 and 34 of Fig. 4 of Noguchi. It would have been obvious to one skilled in the art to use a three-way valve to connect the purge gas line to the source liquid inlet line of Noguchi, in view of the teachings of Sun and Sturm that a three-way valve can successfully be used for that purpose. Regarding the "exhausting branch" recited in claim 1, it is noted that Noguchi (see Figs. 1, 6 and 8) also teaches that the vapor delivery line (16 and 17) for delivering vapor to the CVD reaction chamber 1 is connected to a branch line for purged liquid expelled from the vaporizer by purge gas. Also, the particular inert gases listed in claim 2 are a recitation of intended use that do not so limit the present apparatus claims.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi (JP 2001-250819) taken in view of Lei (US 2003/0049933) and in further view of Sun (6,409,839) and/or Sturm (6,178,925) for the reasons stated in the previous paragraph, and taken in further view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is well known in the semiconductor processing art as a functional equivalent for TEOS. If, for the sake of argument, claim 4 were considered to be limited

by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to substitute TMCTS for the TEOS of Noguchi, because Stolmeijer teaches that TMCTS was a well-known substitute for the TEOS used by Noguchi.

Claims 5, 6, 8, 9 and 12-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, and Sun and/or Sturm, for the reasons stated in the previous paragraph rejection, and taken in further view of Yamamuka (6,110,283). Noguchi (Figs. 1, 6 and 8) provides valves 7 and 8 to switch his vapor flow into the exhausting branch 18, but he doesn't discuss the use of a three-way valve for this purpose. Lei (see Fig. 5, three-way valve 192) and Yamamuka (see Fig. 1, three-way valve at junction of vapor delivery line 17 and vent line 17) each teach the use of a three-way valve on a gas line down-stream of a vaporizer for connecting the gas line with an exhausting branch (i.e. vent line) and a delivery line that is connected to a CVD reaction chamber. Lei (paragraph 43) teaches that the three-way valve 192 allows source vapor to flow to by-pass the CVD chamber during the process of stabilizing the flow prior to introduction to the CVD chamber. Noguchi (paragraph 10 of translation) teaches that his exhausting branch 18 is used for this same purpose of stabilizing initial flow. Yamamuka (col. 7, lines 31-33) teaches that his three-way valve can be used for purging unnecessary CVD source material through the exhausting branch 52. Noguchi (paragraph 53 of the translation) teaches that his exhausting branch and waste tank 10 are used for the same purpose. It would have been obvious to use a three-way valve of the type taught by Lei and Yamamuka to connect Noguchi's exhausting branch 18 because Lei and Yamamuka teach that such a three-way valve can successfully be

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used for switching a vapor flow back and forth between an exhausting branch and a CVD chamber delivery line, wherein the exhausting branch is used for the same purposes as in Noguchi. Regarding the limitation of a heating means "deposited" between the liquid injector and carrier gas provider as recited in claims 8-16, it is noted that the heater 44 of Noguchi's Fig. 9 vaporizer, and also the heater of Fig. 8 of Lei (see also paragraphs 52 and 53 of Lei) are positioned between the liquid injector and a carrier gas provider.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, and Sun and/or Sturm and Yamamuka (6,110,283) for the reasons stated in the previous paragraph rejection, and taken in further view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is well known in the semiconductor processing art as a functional equivalent for TEOS. If, for the sake of argument, claim 12 were considered to be limited by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to substitute TMCTS for TEOS in the apparatus of Noguchi, because Stolmeijer teaches that TMCTS was a well-known substitute for the TEOS used by Noguchi.

Claims 10-11 and 14-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, Sun and/or Sturm (6,178,925), and taken in further view of Yamamuka (6,110,283) for the reasons stated in the previous paragraph rejection, and taken in further view of Ewing (5,553,188). Regarding the recited heating coil of claims 10-11 and 14-16, Ewing (Fig. 4, col. 4, lines 41-44 and col. 7, lines 7-10) teaches the use of a heater in the form of a coil to heat a vaporizer. It

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would have been prima facie obvious to provide the heater 44 of Noguchi's Fig. 9 vaporizer in the form of a coil because Ewing makes clear that a heater in the shape of a coil can successfully be used to heat a vaporizer. It is noted also that the heater 44 of Fig. 9 of Noguchi is located between the liquid injector 41 and the carrier gas provider 38. Furthermore, the heater 44 of Noguchi heats the entire injector valve body, and therefore it inherently heats carrier gas that flows through the carrier gas passageways 38, 43 and 40 that are located in the valve body.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, Sun and/or Sturm (6,178,925), Yamamuka (6,110,283) and Ewing (5,553,188) for the reasons stated in the previous paragraph rejection, and taken in further view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is well known in the semiconductor processing art as a functional equivalent for TEOS. If, for the sake of argument, claim 16 were considered to be limited by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to substitute TMCTS for TEOS in the apparatus of Noguchi, because Stolmeijer teaches that TMCTS was a well-known substitute for the TEOS used by Noguchi.

Claims 8-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, Sun and/or Sturm (6,178,925), and taken in further view of Yamamuka (6,110,283) for the reasons stated in the previous paragraph rejection, and taken in further view of Nagashima (5,419,924), Chen (6,267,820) and Kanishak (6,086,711). If for argument's sake the heaters of Noguchi and Lei did not read on the heater recited in claims 8-16, such would be obvious in view of Nagashima. Nagashima

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(see Fig 1, gas heater 18, and also col. 3, lines 26-28) teaches that it is desirable to preheat the carrier gas prior to introducing it into a vaporizer. It is noted that Nagashima's vaporizer (see Fig. 4) is the same type of vaporizer as used by Noguchi (see Fig. 9) and Lei (see Figs. 6-8). Sturm (see Fig. 1, element 56) also teaches the use of a carrier gas preheater. It would have been obvious to use a carrier gas preheater of the type taught by Nagashima or Sturm with the vaporizer of Noguchi because Nagashima and Sturm teach that preheated carrier gas can successfully be use to vaporize a source gas. Chen also discloses a vaporizer of the type used by Noguchi, Lei and Nagashima. Chen is cited for his teaching (col. 1, lines 39-44) that this type of liquid injector is susceptible to clogging by reaction with moisture and other contaminants, and thus Chen provides an additional reason why it would be obvious to provide a purge gas to remove liquid from such a liquid injector. Regarding the recited heater coil of claims 10-11 and 14-16, Kanishak (see Fig. 1, element 18, and col. 3, lines 24-27) teaches the use of a heating coil to preheat carrier gas that is used in a vaporizer. It would have been obvious to one skilled in the art to use a heating coil as the carrier gas heater of Nagashima because Kanishak teaches that a heating coil can successfully be use to heat carrier gas.

Regarding the rejection over Noguchi taken in view of Lei, Sun and/or Sturm (6,178,925), and Yamamuka, and taken in further view of Nagashima (5,419,924), Chen (6,267,820) and Kanishak (6,086,711), the statement of the rejection in the previous office action makes clear that claims 10-11 and 14-16 were included in the rejection because the rejection specifically states that "(r)egarding the recited heater coil of

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claims 10-11 and 14-16, Kanishak (see Fig. 1, element 18, and col. 3, lines 24-27) teaches the use of a heating coil to preheat carrier gas that is used in a vaporizer. It would have been obvious to one skilled in the art to use a heating coil as the carrier gas heater of Nagashima because Kanishak teaches that a heating coil can successfully be use to heat carrier gas”.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi taken in view of Lei, Sun and/or Sturm (6,178,925), Yamamuka (6,110,283), Nagashima (5,419,924), Chen (6,267,820) and Kanishak (6,086,711)) for the reasons stated in the previous paragraph rejection, and taken in further view of Stolmeijer (5,874,314). Stolmeijer (see col. 2, lines 40-45) teaches that TMCTS is well known in the semiconductor processing art as a functional equivalent for TEOS. If, for the sake of argument, claim 16 were considered to be limited by the recitation of TMCTS as the liquid source, it would have been obvious to one skilled in the art to substitute TMCTS for TEOS in the apparatus of Noguchi, because Stolmeijer teaches that TMCTS was a well-known substitute for the TEOS used by Noguchi.

Regarding Sun, applicants have argued that Sun discloses spraying solvent into a vaporizer but does not disclose a purging gas provider. Regarding solvent spraying, it appears that applicants are discussing Fig. 7 of Sun. It is noted, however, that the rejection over Sun that was stated in the previous office action clearly refers to Fig. 6 of Sun. The rejection clearly points out that element 72 of Fig. 6 of Sun is a purge gas provider and it is connected by a three way valve 70 in the manner recited in claim 1. applicants have also argued that Sun does not disclose the use of an exhausting branch

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as recited in claim 1. It is noted, however, that the statement of the rejection in the previous office action clearly identified discharge line 68 as being “an exhausting branch” as recited in claim 1. It is noted that the liquid that is purged by purge gas 72 must inherently be exhausted through line 68. Applicants are respectfully requested to explain why they think that discharge line 68 of Fig. 6 of Sun is not “an exhausting branch exhausting redundant said liquid that is purged by a purging gas”.

Regarding Sturm, applicants have argued that the purge gas provider 40 of Sturm is not equivalent to the claimed purge gas provider, which is to purge out the liquid source that remains inside the liquid injector. It is noted, however, that this is exactly the purpose of Sturm’s purge gas provider, 40 which purges out liquid that remains in the liquid injector after the injector is finished with an injecting process. Applicants have also argued that “(t)he valve 24 of Sturm is not located between a liquid source, a purging gas provider and a liquid injector, as recited in claims 1 and 8”. It is noted, however, that valve 24 of Fig. 1 of Sturm is located between the liquid source 32, the purging gas provider 40 and the liquid injector. It is noted also that the sudden burst purge step of Sturm that forcibly ejects the hold-up liquid onto the hot vaporizer element has an inherent capability of “making said liquid source atomized to be an atomized liquid source” at least to the extent required by the claims as written.

Regarding the rejections based on Noguchi as primary reference, applicants have argued that the combination of references does not disclose the purging gas provider as claimed. It is noted, however, that Noguchi teaches (see Fig. 4, for example) the use of a purge gas line connected to the source liquid inlet line 46 for

purging source liquid from the portion of line 46 that is near the heated vaporizer.

Therefore, Noguchi does teach a purging gas provider as claimed.

Applicants have further argued that the combination of references in the Noguchi rejection does not teach the claimed relationship between the three-way valve and the liquid source, the purging gas provider and the liquid injector. It is noted, however, that this limitation is obvious in view of Sun or Sturm. Sun (see Fig. 6) and Sturm (see Fig. 1) both also teach the use of a purge gas line for purging source liquid from the source liquid inlet line of a vaporizer. Furthermore, Sun (see valve 70 of Fig. 6) and Sturm (see valve 24 of Fig. 1) both also teach that the purge gas line can be successfully connected to the source liquid inlet line by means of a well-known three-way valve. It is well known in the art that a three-way valve such as valve 70 of Sun or valve 24 of Sturm can be used as a more compact replacement for two valves such as valves 33 and 34 of Fig. 4 of Noguchi. It would have been obvious to one skilled in the art to use a three-way valve to connect the purge gas line to the source liquid inlet line of Noguchi, in view of the teachings of Sun and Sturm that a three-way valve can successfully be used for that purpose.

Further regarding the rejections based on Noguchi as primary reference, applicants have argued that "none of the references disclose the three-way valve as being connected TDMAT outlet port, which is not located between the purging gas provider and the liquid injector". It is not clear what applicants mean by this statement and further explanation and clarification is respectfully requested.

It is noted that Lei's disclosure mainly discusses the use of TDMAT as the CVD precursor liquid to be vaporized. It is also noted, however, that Lei (see paragraph 57) also specifically identifies TEOS as another liquid intended to be vaporized in Lei's vaporizer. TEOS is also the CVD precursor liquid that Noguchi vaporizes in his vaporizer. Since Noguchi and Lei both intend to vaporize the same liquid in their vaporizer, these references are also combinable together for this further reason.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Richard Bueker
Primary Examiner
Art Unit 1763